

## **SOP 17 - Pressure and Vacuum Operations**

- A. Pressure or vacuum systems should be equipped with pressure relief devices
  - 1. Examples: Rupture disks or spring-loaded relief valves.
  - 2. Pressure relief devices that may discharge hazardous materials (toxic, flammable, corrosive, etc.) should be vented in a safe and environmentally acceptable manner.
  - 3. Only qualified personnel should perform maintenance on pressure relief devices.
  - 4. Shutoff valves should not be placed between pressure relief devices and the equipment they are to protect.
  - 5. Emergency shutoff valves should be placed at both ends of a process column to control the flow of material in event of failure or rupture.
  - 6. Pressure systems should be inspected regularly; the inspection interval depends upon the criticality of the exposure and upon the likelihood that corrosive or hazardous service could reduce the life of the system.
  - 7. Pressure differentials between systems can force process fluids into unexpected, and perhaps undesirable, locations.
- B. Assembly of Pressure Systems
  - 1. Only approved components should be used in the construction of pressure or vacuum systems.
  - 2. Threaded connections should fit accurately.
    - a. Threaded connections should not be forced.
    - b. Lubricants should not be used on systems that will use oxygen or flammable gases.
    - c. Damaged or ill fitting threaded connections should be rejected.
- C. Consideration should be given to the consequences of accidental leakage between lower and higher pressure systems.
- D. Vacuum apparatus should be placed well back on the laboratory bench or into the fume hood to reduce the potential of it being struck by passersby.
- E. Mouth pipetting and sucking on hoses is prohibited.
- F. Glassware
  - 1. Handle vacuum-jacketed apparatus with care to prevent implosions.
  - 2. Glassware should be taped or shielded.
  - 3. Only glassware designed for vacuum operations should be used for that purpose.
  - 4. Examine for flaws all glassware used in pressure operations prior to placing it in service.
  - 5. Do not rely upon corks, rubber stoppers, or plastic tubing as relief devices for glassware.